

**SERVICE MANUAL MODEL 427-A/W
FROSTY FACTORY OF AMERICA, INC.
RUSTON, LA. 71270
(318) 255-1162**

All technical data, pictures and drawings contained in this manual are not binding on the manufacturer nor can the manufacturer be held liable for any modifications to the machine in whole or in part.

Rev. 03/18/03 pt

SECTION 1 INTRODUCTION

1.1 USE OF THIS MANUAL

Your service manual has been prepared as a guide to help you get the most from your model 427A Smooth Operator Shake Machine. It contains information about the installation and operation of your machine. The manual also contains instructions for service and care.

The manual should be read carefully by the operator to become familiar with the machine and the correct operating procedures described within.

The following notations are used throughout the manual to bring important facts to your attention:

“Warning” - This notation is used whenever the personal safety of the operator(s) might be jeopardized, if procedures are not followed correctly.

“Caution” - This notation is used whenever the machine or related equipment may receive or cause damage if not observed.

“Note” - This notation is used to bring important information to your attention that will enhance the performance of your machine.

1.2 PRELIMINARY INSPECTION

Unpack the unit as soon as possible upon its arrival. Check the entire machine and its contents for possible shipping damage. Note damage, if any, and notify your carrier immediately. Frosty Factory of America cannot be responsible for damaged merchandise caused by shipping. Inventory the accessories to be sure they include the items you specified on your order. Normally the accessories include:

- Beater Bar
- Drip Tray
- Drip Trough
- Faceplate
- Faceplate Knobs
- Overrun Tube
- Petro-Gel
- Sanitizer
- Warranty Card
- Wire Brushes

DESCRIPTION

Your Smooth Operator Shake Machine is manufactured with a high quality stainless steel cabinet which houses a restaurant grade stainless steel cylinder and hopper which are attached to a sturdy, hand-crafted steel frame. The drive motor is mounted within the frame and rotates counter clockwise (as viewed from the front of the machine). Panels are stainless steel with plastic louvered inserts to allow maximum airflow for cooling. A stainless steel beater assembly is installed in the cylinder and is held in place by a clear plastic faceplate, which in turn is held onto the face of the machine with four attractive knobs. Mix dispensing is provided for via a specially designed “drip-free” automatic closing faucet assembly.

1.4 SPECIFICATIONS

Freezing Cylinder

7 quart (6.6 liter) capacity.

Mix Hopper

12 quart (11.5 liter) capacity

Refrigeration Unit

Compressor: 3/4 H.P. 6600 BTU/Hour

Refrigerant: R404

Suction Pressure: 35 psi.

Electrical

Dispensing unit: 115V/60Hz/1Ph. 16 total amps with a 20 amp cord.

Dimensions

Dispenser: Width: 16 1/4" (41cm)

Length: 29" (73cm)

Height: 32" (80cm)

Beater Motor

One, 1/3 hp. Motor

Approximate Weights

Net: 205 lbs.

Crated: 215 lbs.

Specifications subject to change without notice.

This unit is designed and constructed to meet stringent safety and sanitation

SECTION 2 **LOCATION & INSTALLATION**

2.1 SAFETY PRECAUTIONS

Do not attempt to operate your Shake Machine until the safety precautions and operating instructions in this manual are read completely and are thoroughly understood.

Take notice of all warning labels on your Sorbeteer. The labels have been put there to inform and protect persons operating and servicing your equipment. Care must be taken not to damage or destroy labels during installation and servicing. The labels have been designed to withstand routine cleaning and handling. Damaged or missing labels should be promptly replaced with approved labels from Frosty Factory of America Inc.

2.2 INSTALLATION

Placing your Shake Machine in a highly visible area will enhance sales.

1. Uncrate your machine.
2. Place the machine on a sturdy platform in a level position.
3. Machines equipped with air cooled condensers must have adequate ventilation: **A minimum clearance of 8 inches is recommended on all sides. Do not place the machine where it could re-circulate its own heated air.**

NOTE: Locating the unit in direct sunlight, near cooking facilities or any high heat area will reduce the performance of your machine.

CAUTION: Extended operations under severe heat condition can damage the cooling system.

4. Place the three-position switch in the OFF position (center).
5. Connect the power cord. The Shake machine must be connected to a properly grounded receptacle. The electrical cord furnished as part of the machine has a three prong grounding type plug. The use of an extension cord is not recommended. If one must be used, refer to the National and local electrical code specifications. Do not use an adapter to get around grounding requirements!

WARNING: Do not attempt to alter the electrical plug. Serious injury electrocution may result.

6. Install the drip tray, hopper cover, beater bar and faceplate assemblies on the Machine. **NOTE:** Refer to cleaning instructions in section 4 of this manual prior to start up.

SECTION 3 OPERATION

3.1 MACHINE CONTROLS

Operation of the Shake machine is controlled by two selector switches and a vending sensor located on the front of the machine. Selection of the right (snowflake) position with the upper (three-position) switch as well as the lower (two-position) switch will schedule the machine for normal operation. The compressor cycle is protected by a time delay circuit, which will engage the compressor approximately 10 minutes after normal operation is initiated.

To activate the compressor, hold an empty cup or container just below the faucet, in front of the motion sensor. The sensor will activate the compressor within one or two seconds.

The red fill light located above the switches will illuminate when the hopper is near empty. Fill the hopper as soon as possible in order to keep the freezing system operational.

NOTE: WHILE THE FILL LIGHT IS ON THE MACHINE WILL NOT OPERATE.

However, if the fill light illuminates while you are drawing product the machine will continue to run until the current compressor cycle is complete. In order to prevent freeze-up, DO NOT DRAW MORE THAN TWO 2-OUNCE SERVINGS ONCE THE FILL LIGHT COMES ON.

Hopper refrigeration is provided by a thermostat controlled glycol pump system. When both switches are selected to the right (cone and snowflake symbols), the glycol pump circulates cold liquid from around the freezing cylinder to the hopper to maintain a product temperature between 35 and 40°F. When the lower switch is placed in the left (thermometer symbol), hopper cooling continues as before except that the compressor will only cycle on and off when necessary to maintain these temperatures. (See monthly service requirement regarding **Glycol level** in section 4.3 of this manual.)

WARNING: OPERATION IN THE STAND-BY MODE, WITH THE FILL LIGHT ON IS PROHIBITED. The product will spoil due to lack of cooling if extended operation is attempted with the lower switch in the left (thermometer) position while the fill light is on.

Refer to the list below for functions available with various combinations of switch positions.

Normal Operation - Machine will freeze your dairy mix to desired consistency.

Cooling Operation - Machine will automatically come on whenever necessary to keep hopper product cooled to 5 °C/40 ° F used primarily for overnight storage of product remaining in the machine. **WARNING: OPERATION IN THE STAND-BY MODE, WITH THE FILL LIGHT ON IS PROHIBITED.** The product will spoil due to lack of cooling if operation is attempted.

Cleaning Operation - The drive motor will run in the faucet position to allow a stirring action of the rinse water while Cleaning.

Off - The hand symbol is the recognized international symbol for “stop”. In this position, the machine will not run.

3.2 THE PRODUCT YOU SERVE

The Shake Machine will produce a “Smoothie” type semi-frozen dairy product when the proper recipe is used. When measured with a refractometer, the proper recipe will measure 12 to 18 “brix”. The Shake Machine is designed exclusively for dairy products that are normally used to produce “smoothie” type drinks with the consistency of a traditional milk shake. Improper recipes will effect the consistency, flavor and freeze times.

Suggestion for optimum production and sales:

- 1) Use the finest ingredients available.
- 2) Test the product before serving it.
- 3) Keep the machine clean -**ALWAYS!**

3.3 PRODUCT CONSISTENCY

An exclusive torque sensing mechanism developed by Frosty Factory of America allows for the production of consistent texture and thickness of your product. The adjustment screw (visible through the access hole in the left side panel) is pre-set at the factory. While it is not likely that you will need to change the consistency adjustment, changes can be achieved by turning the screw clockwise (thicker shake) or counter clockwise (thinner shake). Turn the screw one full turn then allow enough time to lapse (about three minutes) for the compressor to complete a cycle before sampling. Continue this process until desired result is obtained. Once the desired consistency has been, **further changes to the adjustment screw should not be necessary.**

3.4 START UP

1. Clean and sanitize the machine in accordance with the procedures set forth in section 4. of this manual,
2. Pour desired amount of product into the hopper (about 1" from the top of the hopper). When the bubbling of air from the feed hole in the hopper stops, insert the **(Optional) overrun tube** into the feed hole, Then, pour more product into the hopper until the mix level is about 1 inch from the top of the hopper. Replace hopper cover.
NOTE: There are two holes in the **overrun tube**, one at each end. Both holes are the same size and have been determined to be ideal for soft shake consistency. The overrun tube can be installed either end up and may be used when an increased overrun is desired.
3. Place both switches in the right position when ready to freeze product.
4. Momentarily hold a container under the faucet (in front of the vending sensor) This will activate the compressor cycle in 1 to 2 seconds and bypass the 10 minute waiting period.

3.5 FREEZE TIME

The freeze time on the model 427A is approximately 20 minutes. This figure is based on **ideal conditions** with a starting mix temperature of approximately 40 degrees. The time will increase if the machine is not properly ventilated or is operated in a hot environment. Some recipes with high sugar content will naturally take a little longer.

SECTION 4 **MAINTENANCE**

4.1 CLEANING

The following cleaning procedure should be used for initial start-up and on an as needed basis to comply with the minimum cleaning and sanitizing frequencies specified by the Federal, state or local regulatory agency having jurisdiction.

NOTE: The rapid growth of bacteria in all dairy products requires utmost care and vigilance by the operator in order to insure that safe and wholesome products are delivered to the customer. Please follow these cleaning instructions carefully.

- (1) Turn the machine to the off, "hand" position. If applicable, drain mix into a sanitized container as per local health code procedures. Store in an adequate cooling facility.
- (2) Remove hopper cover, remove overrun tube, remove float and float clip for cleaning.

NOTE: Do not put hands or foreign matter into mix.

- (3) Pour two gallons of cool (75° F.) water into the hopper. (**Never use hot water in the machine as permanent damage may occur to the evaporator and hopper.**) Clean the hopper and entire feed hole. (Be sure that the brush has passed all the way through the feed hole into the cylinder!) Place upper switch in "faucet" position to let the machine stir for 2 minutes. Turn machine "OFF", drain and dispose of the rinse water. Repeat until water is clear.
- (4) Mix two gallons of warm water (approximately 100° F) with two ounces of sanitizing powder to achieve 100 parts per million (PPM) sanitizing solution.
- (5) Pour the sanitizing solution into the hopper. Clean hopper and the entire feed hole. Place upper switch in "faucet" position. Let solution stir for 5 minutes. Then, turn machine "OFF" and drain the solution. Rinse with fresh water and drain.
- (6) Remove the knobs from the faceplate by turning in a counter clockwise direction. Carefully pull the faceplate straight away from the front of the machine. Remove the beater bar assembly from the cylinder. Then slide the spring seal off the rear of the beater bar. Unscrew white faucet cap to remove faucet plunger from faucet body. Remove all o-rings for cleaning.

NOTE: Do not unscrew faucet body from faceplate to clean. (Leak free service after disturbing the Teflon seal cannot be assured).

- (7) All parts removed during the above steps plus the drip tray, and insert, can now be cleaned in a warm soapy solution. Rinse all parts in clean rinse water and allow to air dry before re-assembly.

4.2 REASSEMBLY

- (1) Using Petro-Gel (or other sanitary food grade lubricant), lightly lubricate the longer end of the beater shaft. Slide beater seal onto the shaft with the spring end toward the beater bar. (Refer to diagram on top of the hopper cover for depiction of correct installation of spring seal).

NOTE: The black carbon ring must be facing the end of the beater bar so it will be in direct contact with the white ceramic seal inside the cylinder when the beater bar is re-installed. **This is a dry seal and must be kept free of lubricants.**

CAUTION: Lube the beater bar shaft. The beater seal may become damaged if the beater shaft is not lubricated before installation of the beater seal.

- (2) Carefully insert the beater bar (with seal in place) into hole at the rear of the cylinder and rotate until it fully engages into the drive plate.

CAUTION: Rough handling during beater bar installation can damage the ceramic seal.

- (3) Lubricate the large, black, rubber, faceplate O-ring (but not the white face plate bushing) with Petro-Gel then re-install and press firmly into the faceplate groove for proper fit. Lubricate and re-install o-rings on faucet. Re-assemble faucet.
- (4) Re-install the faceplate on the machine. First place the faceplate bushing onto the beater shaft. Then slide face plate onto the four studs. Now re-attach the faceplate knobs and tighten evenly until the face plate O-ring is snug against the cylinder. Re-install float and float clip, and overrun tube.

CAUTION: If you over tighten the knobs or tighten against a beater bar that is not fully engaged in the drive plate permanent distortion to the faceplate may occur!

- (5) Mix two gallons of warm water with one 2-oz. packet of Sanitizer.
- (6) Pour two gallons of solution into hopper. Clean the hopper and feed hole. Be sure the sanitized brush passes all the way through the feed hole and is visible in the cylinder.
- (7) Place upper switch in “faucet” position. Let solution stir for 5 minutes. Turn upper switch “OFF” (hand) position, **drain and dispose of all solution.**
- (8) Pour product into hopper. When bubbling stops re-install the overrun tube. Continue to fill the hopper until about 1” from the top. Drain a small amount of product into small disposable container (about 4 ounces) and discard. Replace hopper cover. Place both switches in right (snowflake) position when ready to freeze product.

4.3 PREVENTATIVE MAINTENANCE

It is recommended that a maintenance schedule be followed to keep the machine clean and operating properly.

WARNING: Never attempt to repair or perform maintenance on machine until the main electrical power has been disconnected.

A. DAILY

The exterior of the machine should be kept in a clean, sanitized condition at all times to preserve the quality of the product and the luster of the stainless steel. A mild soap solution is recommended. Clean with a soft cloth or sponge.

B. WEEKLY

- (1) Check O-rings and rear seal for excessive wear and replace if necessary.
- (2) Clean the drip tray and front of the machine with a soap solution.

C. MONTHLY

- (1) Visually check the glycol level in the supply tube, (visible in the clear tube) after removal of the left side panel. The glycol level should be about 2 inches from the top of the tube. Mix Glycol with an equal amount of water to achieve a 50% mix.
- (2) Visually inspect the condenser for dirt by shining a light through the coil from the inside of the condenser.

CAUTION: Air-cooled condensers must have proper air circulation. Failure to clean the condenser on a regular basis may result in serious damage and could void warranty.

- (3) If the condenser is dirty, place a wet towel over the outside of the condenser. Using compressed air or a CO₂ tank, blow out the dirt from the inside of the condenser. Most of the dirt will cling to the wet towel.
- (4) An alternative method of cleaning the condenser is to use a condenser brush and vacuum.

NOTE: If the condenser is not kept clean, loss of refrigeration efficiency will result, causing extended run time or soft product consistency.

4.4 EXTENDED STORAGE

Refer to the following steps for long term storage of the machine.

- (1) Turn the three position switch to the OFF (center) position.
- (2) Disconnect (unplug) from the electrical supply source.
- (3) Clean thoroughly with a warm detergent solution all parts that come in contact with the mix. Rinse in clean water and air-dry all parts. Do not sanitize. Shake Machine parts can be left assembled or disassembled until ready for use.

NOTE: Do not let the cleaning solution stand in the cylinder during the shutdown period.

4.5 TROUBLESHOOTING

1. Machine does not run when turned on

- A. If fill light is on---fill hopper with product, machine will now run.
- B. If vending sensor is flashing---hold container in front of sensor, machine will start.
- C. If nothing is on---plug machine into outlet or re-set breaker.

2. Beater motor does not start when container is held near the vending sensor.

- A. If indicator light is flashing---clean sensor with damp washcloth.
- B. If indicator light is not flashing---check mix level, and check that switches are on "cone" and "snowflake" positions.
- C. If freeze-up has occurred---turn machine off to let mix thaw then re-set overrun tube to larger hole. (Freeze-up occurs when too much air is in the mix.)

3. Mix dripping from faucet or face plate

- A. If O-rings are missing or improperly installed---clean and re-assemble faceplate according to instructions in section 4 of this manual.
- B. If drip is coming from faucet be sure the faucet is completely closed.

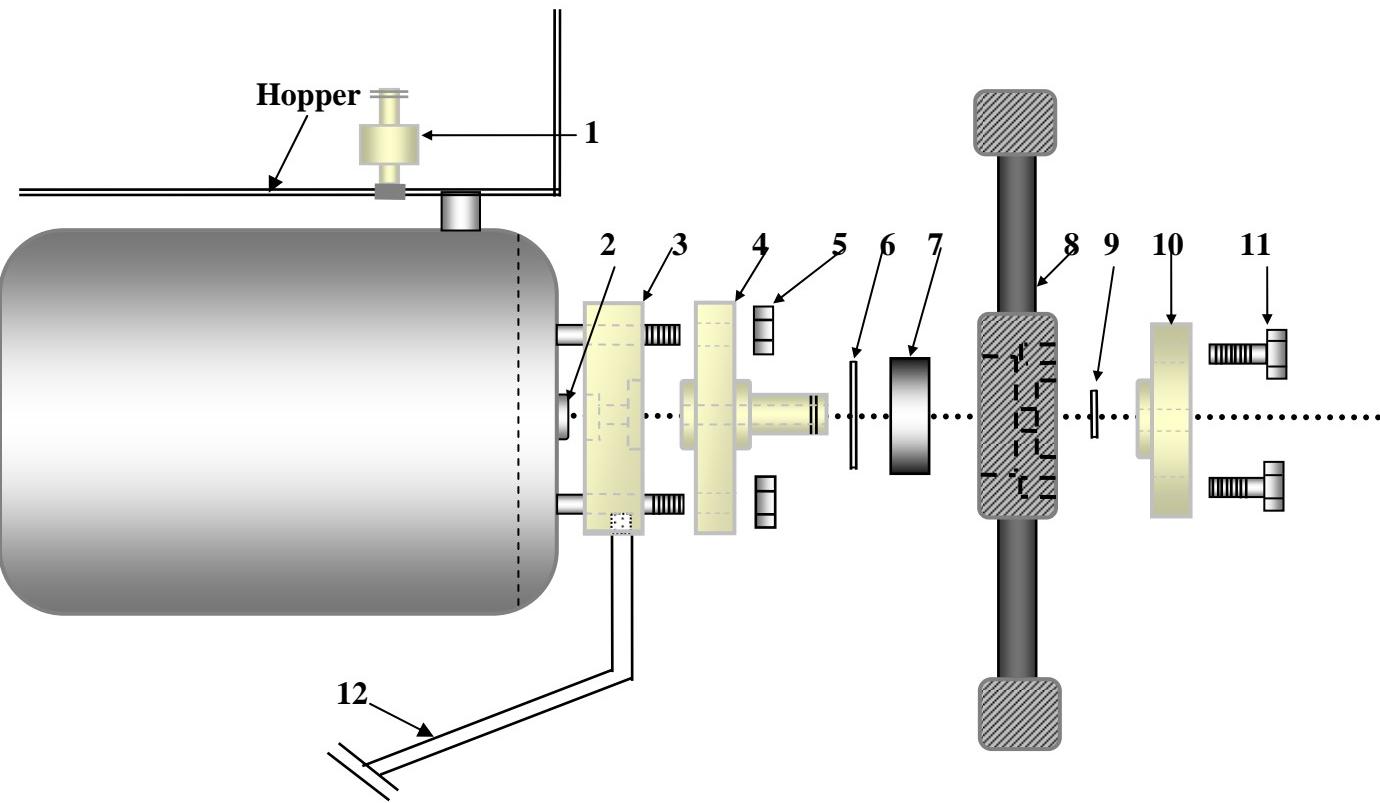
4. Mix dripping from drip tube.

- A. Clean and re-assemble beater bar according to instructions in section 4 of this manual. An improperly installed spring seal probably caused the leak.

5. Milk shake is too thin.

- A. If machine has not cycled off---allow machine to run until it shuts off. Shake should now be proper consistency.
- B. If machine has cycled off---Check recipe to see if improper mix has been used.
- C. If several shakes have been served in fast sequence---allow time for the machine to recover, (about three to five minutes) before continuing to serve. If no product has been drawn in awhile---draw several servings in a sanitary container and pour back into the hopper. Stir product in the hopper and re-start the freezing process by holding a container in front of the vending sensor.

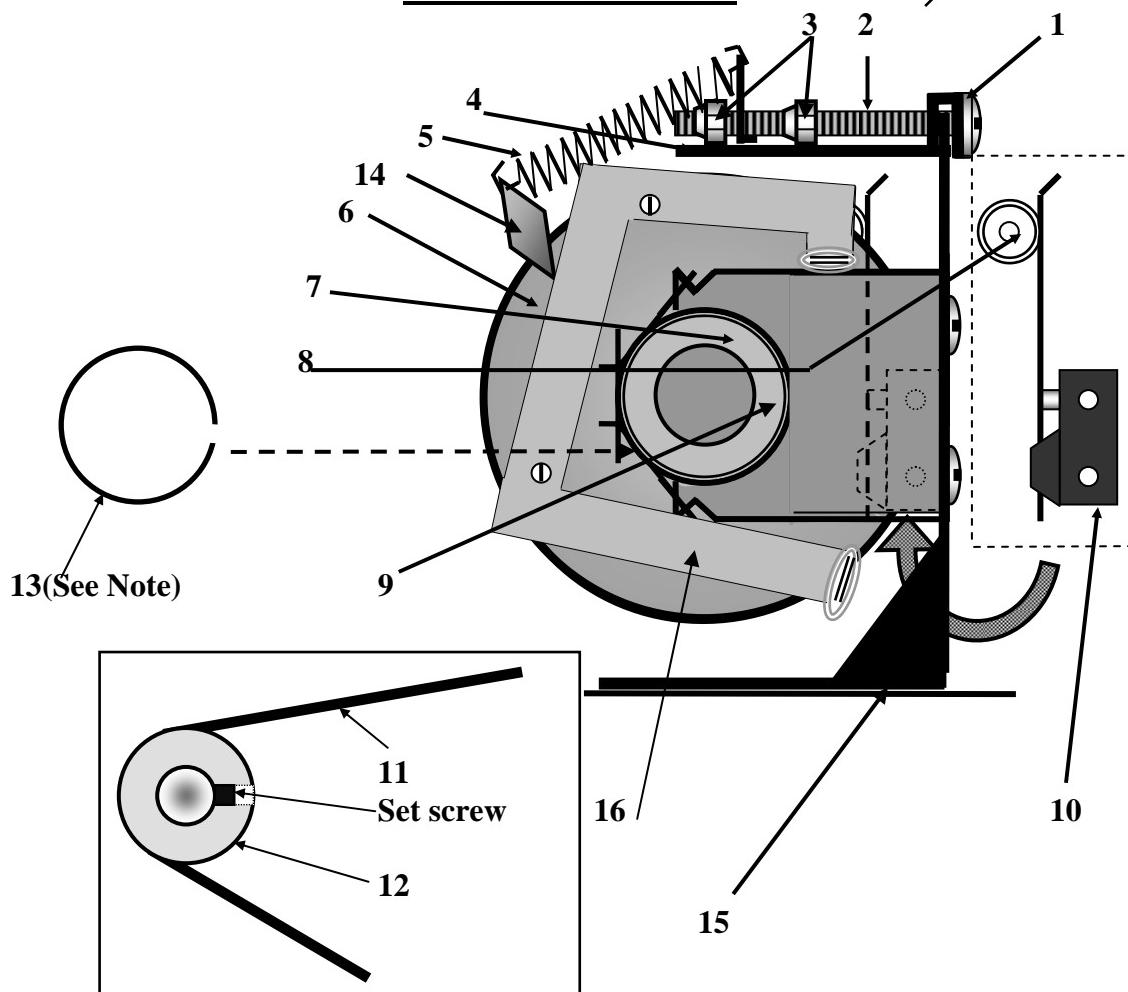
REAR CYLINDER ASSEMBLY
SMOOTH OPERATOR
Model Numbers 427A



ITEM NUMBER	DESCRIPTION
1. F0811	Fill Light Switch
2. F0355 *	Ceramic Seal *
3. C2309	Drain Spacer Block
4. C2306	Bearing Plate
5. F0439	Bearing Plate Nuts 5/16x18
6. F0330	Large Clip Ring
7. F0267	Flywheel Bearing
8. F6525	Flywheel
9. F0331	Small Clip Ring
10. C4403	Drive Plate
11. F0236	Drive Plate Bolts 5/16x19x1"
12. F0426	3/8" Drain Tube(plastic)

*Note: F0355 is the part number for the Spring Seal Assembly
which includes the ceramic seal (No.2 above)

TORQUE CONSISTENCY CONTROL
SMOOTH OPERATOR



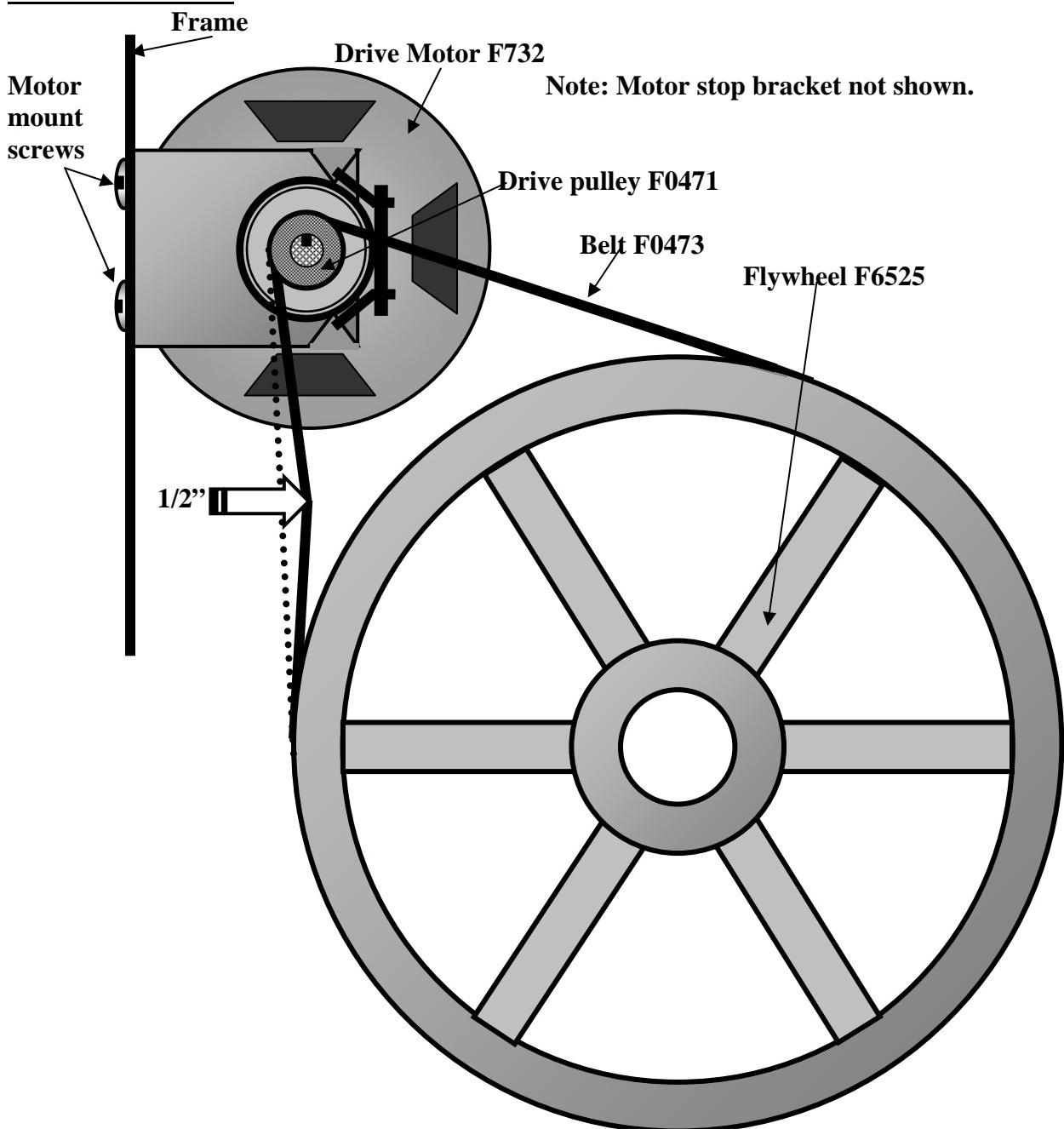
ITEM NUMBER

1. F0443	DESCRIPTION
2. F0440	Washer, flat 5/16"
3. F0441	Tension Adjustment Screw
4. F4202A	Lock Nuts, 1/4"
5. F0469	Adjustment Bracket
6. F732	Tension Spring
7. F0474	Drive Motor
8. F0162	Motor Bracket Bearing
9. F0470	Micro -switch Cam
10. F0346	Rubber Band, Motor Bracket
11. F0473	Micro-switch
12. F0471	Drive Belt
13. F0092	Drive Pulley
14. F6516	Split Ring
15. F0117	Spring Bracket
16. F1203	Motor Mount (Removable)
	Lg Motor Stop Bracket

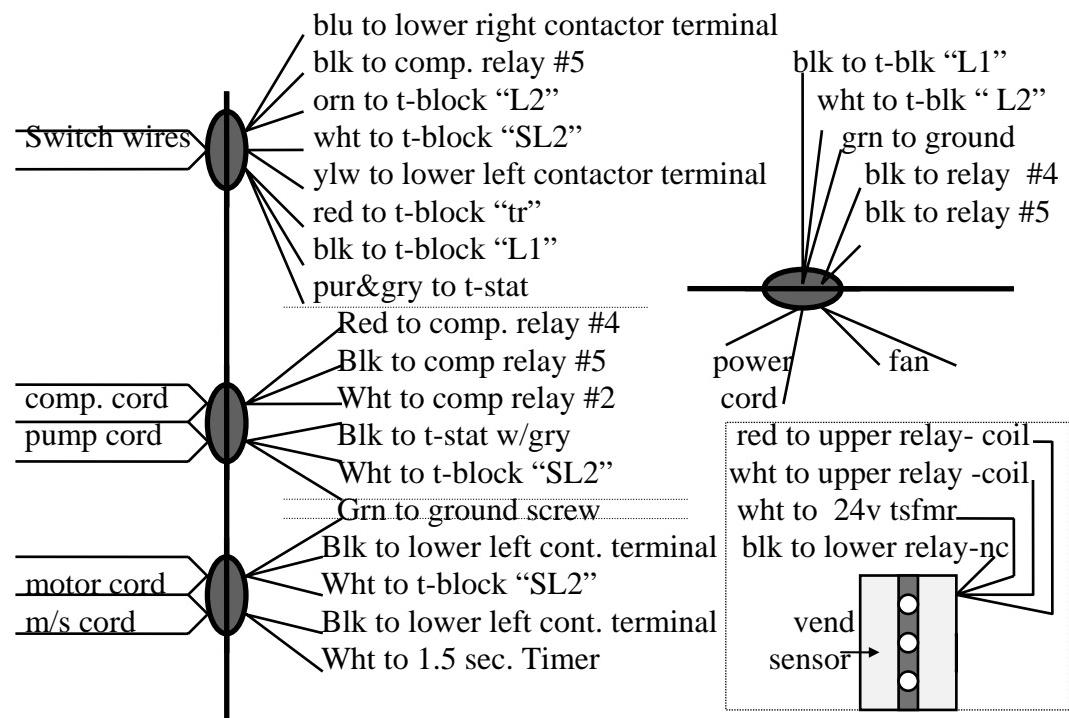
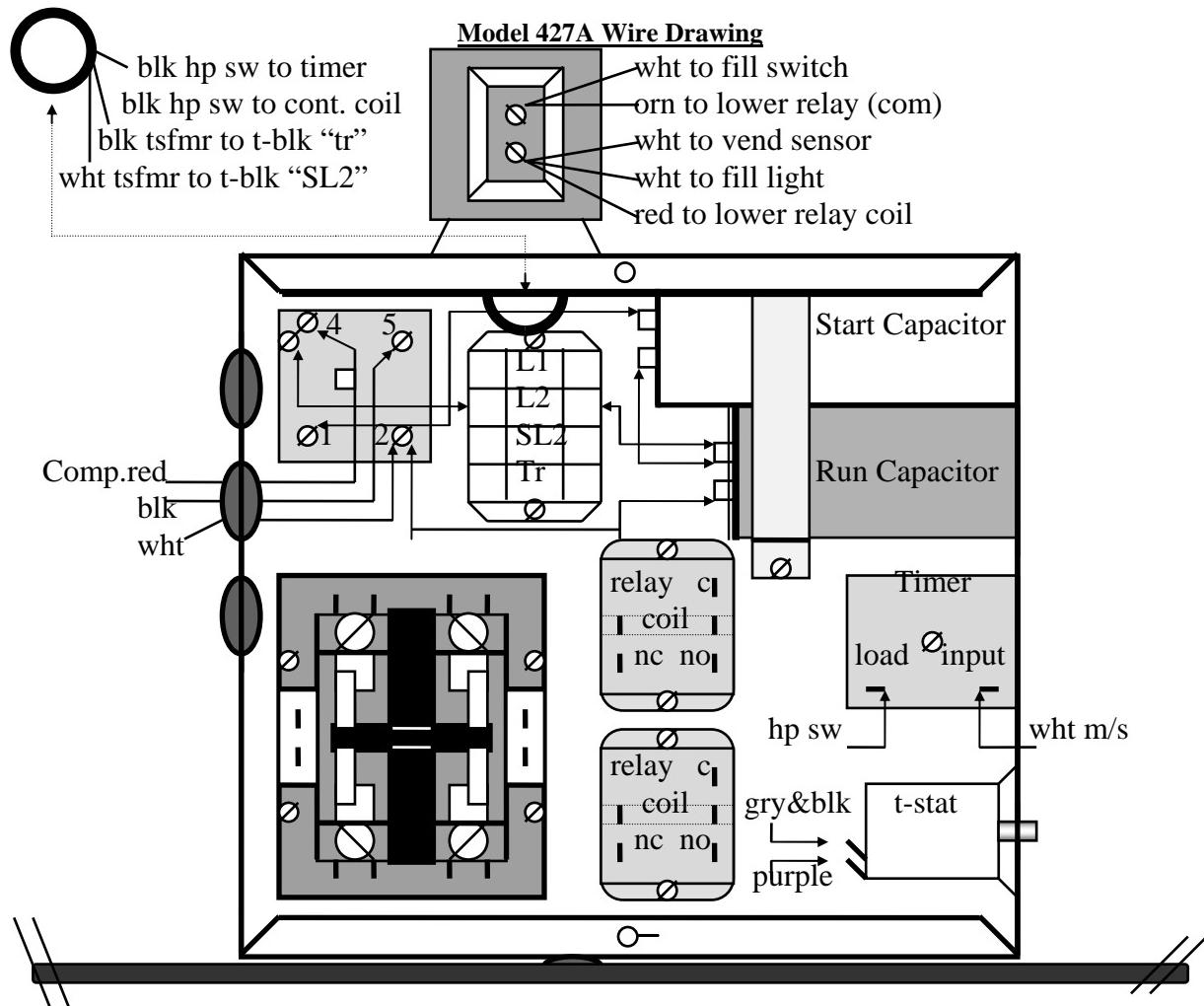
Note: The split Ring fits into the motor frame. It should be installed around the motor bearing and rubber-band prior to placing the assembly into the motor

Drive Belt System

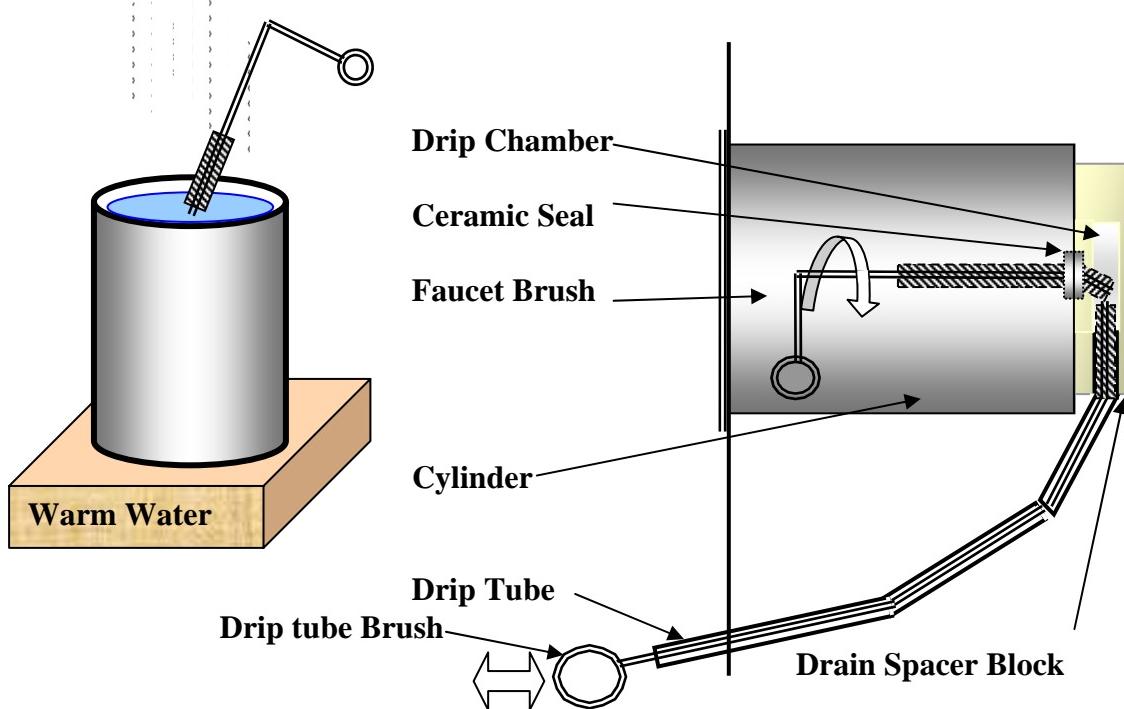
All Sorbeteer Models



1. To increase belt tension, loosen the **4 motor mount screws** and pry the entire motor assembly until the belt is snug. Re-tighten the motor mount screws.
2. To test the belt tension, press on the belt at the mid-point (arrow). The belt should move easily for the first $\frac{1}{2}$ inch. It should be difficult to press the belt more than $\frac{1}{2}$ inch.
3. To align the drive pulley with the flywheel, loosen the Allen screw on the drive pulley and nudge the pulley forward or back as necessary.



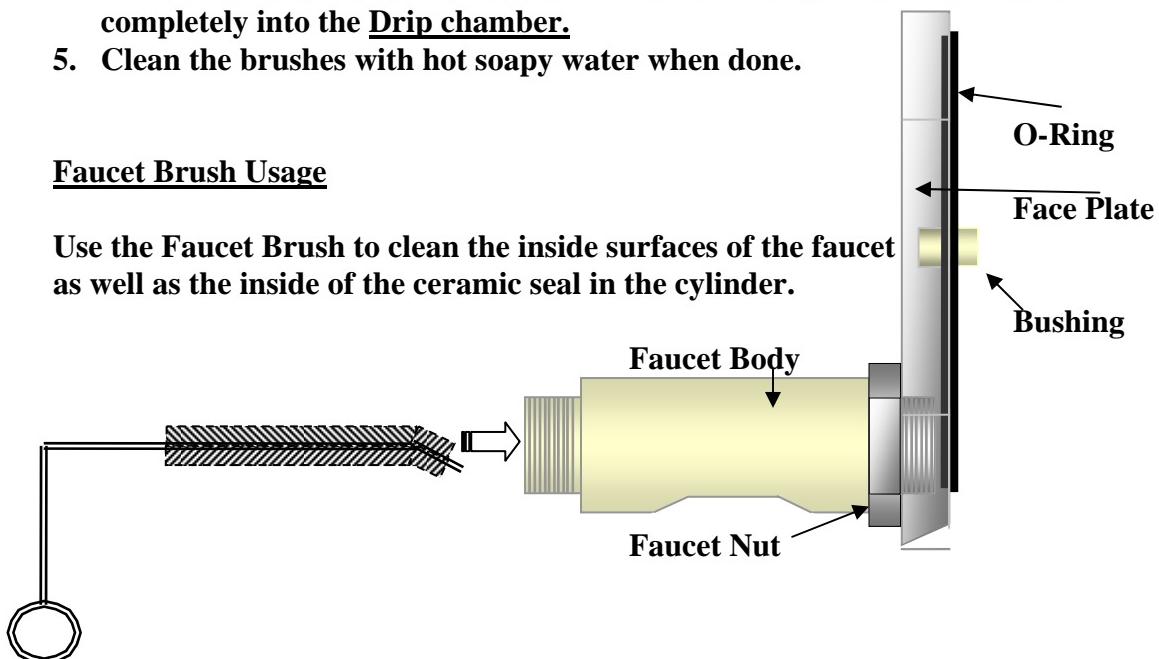
Drip Tube Brush Usage



1. Dip the Faucet Brush in warm water.
2. Insert brush into the hole in the ceramic seal in the rear of the cylinder. Rotate the brush completely around to clean, as shown. Remove brush.
3. Dip the Drip Tube Brush in warm water and insert brush into drip tube.
4. Move brush back and forth to clean. Be sure the brush has been inserted completely into the Drip chamber.
5. Clean the brushes with hot soapy water when done.

Faucet Brush Usage

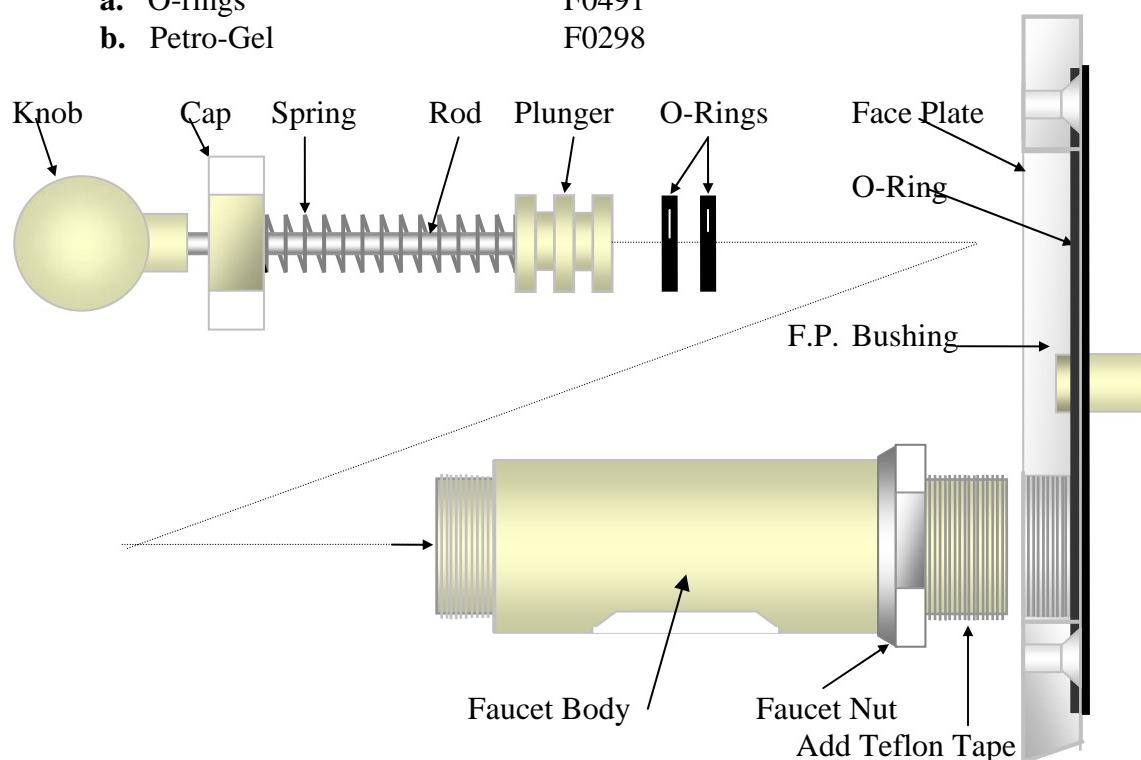
Use the Faucet Brush to clean the inside surfaces of the faucet as well as the inside of the ceramic seal in the cylinder.



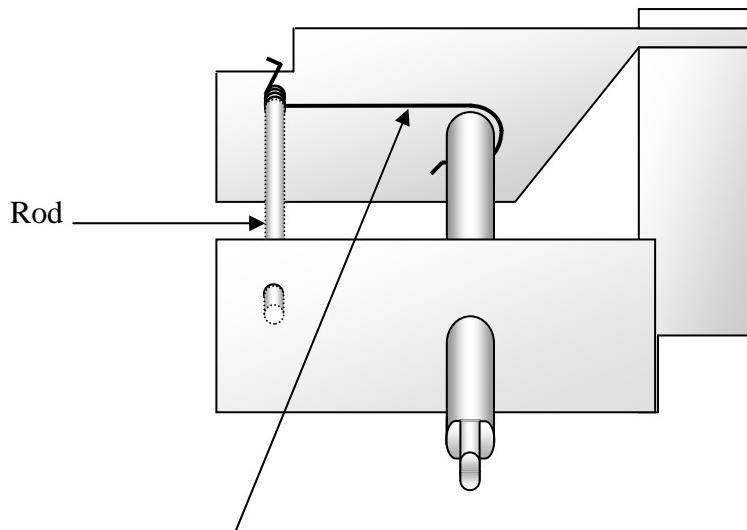
FACEPLATE ASSEMBLY
MODEL 427A

Face Plate/Faucet Assembly

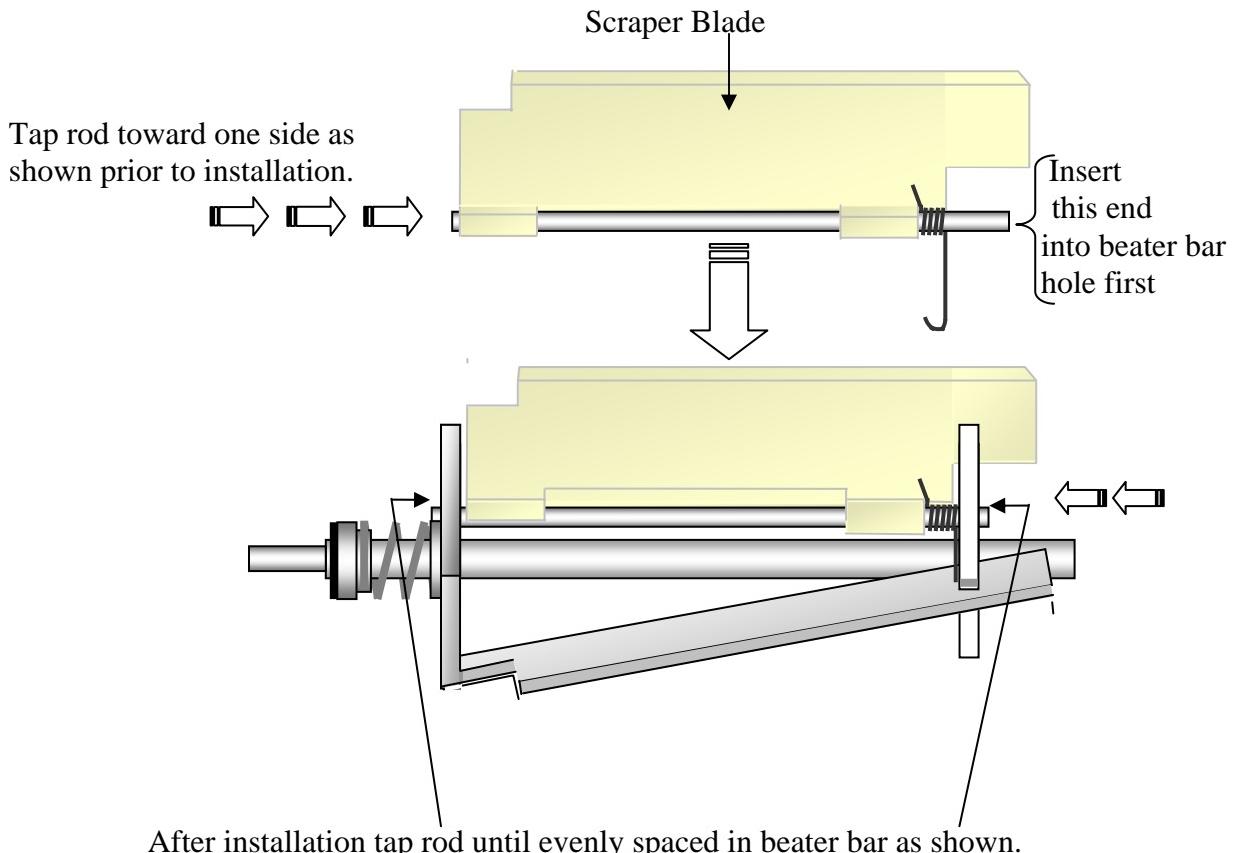
	Part No.
A. The face plate assembly	C6521
1. Bushing	C6522
2. O-Ring	F0357
3. Faucet assembly	C6513
B. The faucet assembly.	
1. Faucet body.	C6513B
2. Chrome nut	F0197
3. Teflon tape.	N/A
4. Plunger assembly	C6513P
a. O-rings	F0491
b. Petro-Gel	F0298



Beater Bar Spring Installation

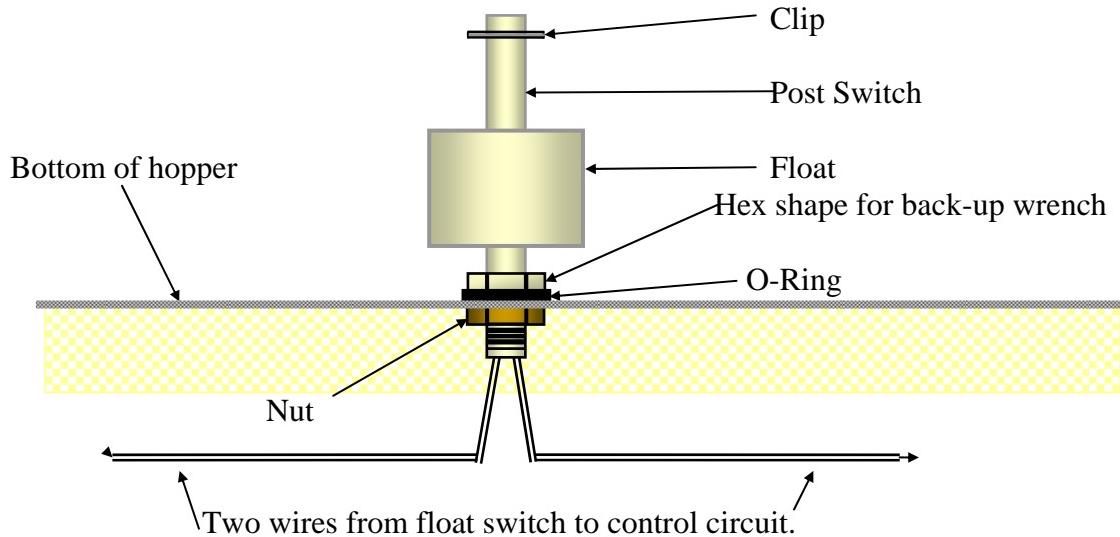


Spring position is shown without scraper blade for clarity

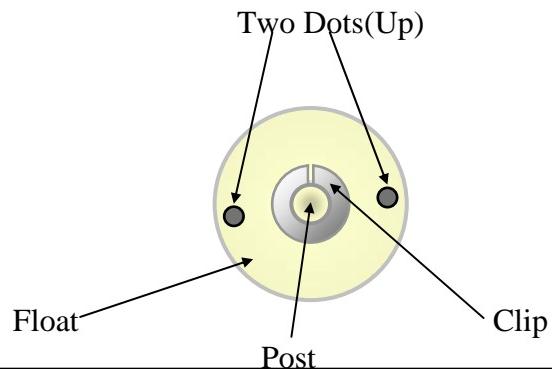


FLOAT SWITCH ASSEMBLY

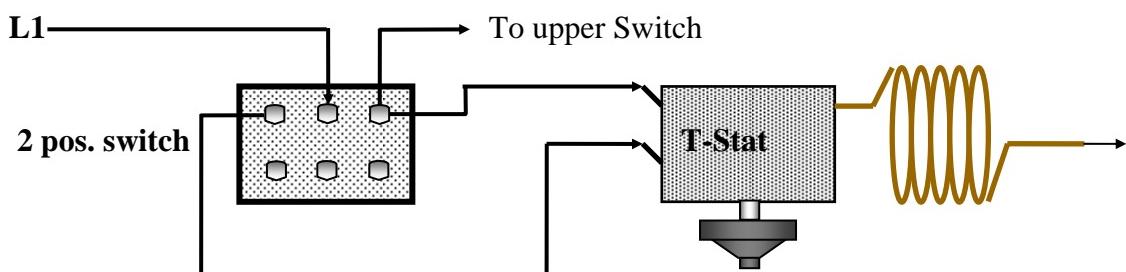
1. The float switch assembly consists of: Post switch, Float , Float clip, O-Ring and Nut.
2. There are two dots on one end of the float. When assembled the two dots must be on the top end of the float.
3. Place O Ring so that it will be inside the hopper (sink bottom) when finished.



Top View of Float Switch

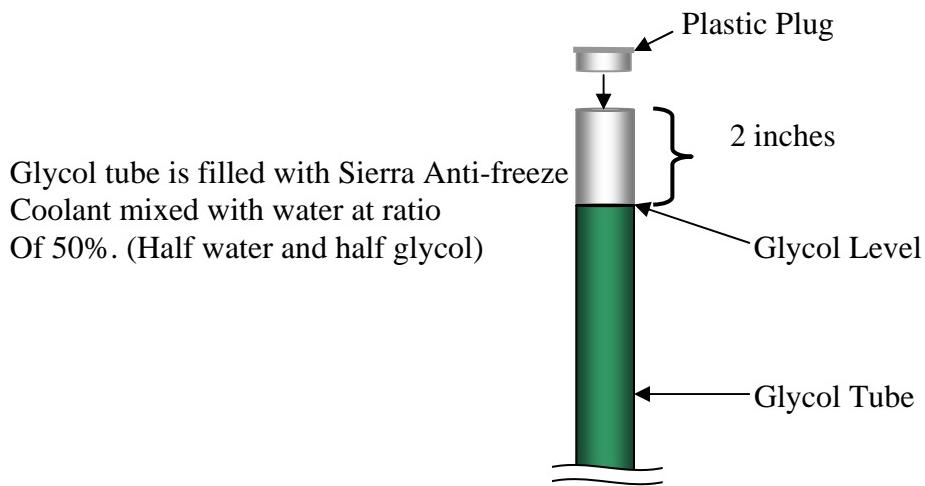


Thermostat System-Stand-By



Glycol Tube

Hopper refrigeration is provided by a thermostat controlled glycol pump system. When both switches are selected to the right (cone and snowflake symbols), the glycol pump circulates cold liquid from around the freezing cylinder to the hopper to maintain a product temperature between 35 and 40°F. When the lower switch is placed in the left (thermometer symbol), hopper cooling continues as before except that the compressor will only cycle when necessary to maintain these temperatures. (See monthly service requirement regarding **Glycol level** in section 4.3 of the manual.)



The Glycol tube is located on the left side of the machine in the front corner of the frame.

SPARE PARTS LIST
SMOOTH OPERATOR SHAKE MACHINE MODEL NO. 427A

7-13-04

<u>DESCRIPTION</u>	<u>ITEM NUMBER</u>
Compressor, 3/4 H.P. 115/60/1 AK9455ZXA	F8053
Run Capacitor	85PR370F20
Start Capacitor	85S250C30
Start Relay	820ARR3D10
Compressor, 3/4 H.P. 230/60/1 AK9455ZXD	F8054
Run Capacitor	85PR37036
Start Capacitor	85685
Start Relay	820ARR3C29
Air Condenser	F5557
Bearing Plate	C2306
Beater Bar (long)	C6530
Beater Bar Spring Seal	F0355
Contactor	F0049
Drain Spacer Block	C2309
Drip Tray	F0114
Drip Tray Insert	F0128
Drip Tray Screws	F0905
Drip Tube Brush	F6526
Drive Belt	F0473
Drive Motor	F732
Drive Motor Pulley	F0471
Expansion Valve	F0530
Face Plate Bushing	C6522
Face Plate Knobs	F0262
Face Plate(sm)	C6521
Fan Blade (11")	F5558
Fan Motor Bracket	F5500
Fan Motor-115 Volt	F5559
Fan Motor-230 Volt	F5560
Fan Shroud	F5501
Faucet Assembly	C6513
Faucet Body	C6513B
Faucet Brush	F0326
Faucet Nut	F0197
Faucet Plunger	C6513P
Faucet Spring	F0564
Feed Hole Brush	F0099
Fill Light	F0207
Filter-Drier	F5543
Float Clip	F0812
Flywheel	F6525
Flywheel Bearing	F0267

<u>DESCRIPTION</u>	<u>ITEM NUMBER</u>
Glycol re-circulating pump	F0047
Hopper Cover	F0497
Large Clip Ring	F0330
Left Side Panel *	F6405
Micro-switch (long)	F0346
Motor Bearing	F0474
Motor Spring Bracket	F1239
O-Ring, Face Plate (sm)	F0357
O-Ring, Faucet	F0491
O-Ring, Fill Switch	F0161
Overrun Tube	C6585
Panel Louver	F0254
Petro-Gel	F0298
Proximity Sensor	F0052
Rear Panel *	F6407
Relay NO/NC 15A	F0050
Relay, Time Delay (1.5 sec.)	F4994
Right Side Panel *	F6406
Sanitizer	F0492
Scraper Blade (long)	C6510F
Scraper Blade Spring (sm)	F6517
Small Clip Ring	F0331
Stainless Steel Legs	F0800
Switch Nut	F7003
Switch, 2-Position, Bottom	F0417
Switch, 3-Position Top, (3 gang)	F0418
Switch, Fill Light	F0811
Switch, High Pressure (400psi)	F5564
Tension Spring	F0469
Thermostat	F0397
Transformer	F4995